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Oceans may provide clues to future rainfall

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Changes in the salinity of our oceans are being brought about by man's influence on our climate, suggests new research conducted by the Met Office Hadley Centre and the Walker Institute for Climate System Research at the University of Reading, to be published in Geophysical Research Letters next month.

Using data from the Atlantic Ocean and Met Office climate model simulations, the study reveals increasing salinity in the sub-tropical zone - an indication of less rainfall and increased evaporation. This mirrors decreased rainfall over land areas in the same latitudes identified in previous research in 2007, attributing this to human activity.

Saltiness of the oceans can help us to understand what the likely drying and droughts on land might be in the future. Peter Stott, head of climate monitoring and attribution at the Met Office and leader of the study, explains: "Knowing how our oceans are changing over what are essentially vast data-sparse areas is important. It provides us with a window on changes in the hydrological cycle and gives us more certainty in projections of rainfall as the climate changes. In our region, for instance, this research could help us to refine projections of summer drying extending out from the Mediterranean basin."

Co-author Professor Rowan Sutton said: "The freshening of polar waters in the Atlantic, which has raised fears about a collapse of the warm Gulf Stream current, leading to a significantly colder climate for Europe, looks not to be related to increasing greenhouse gases, but natural variability."

The scientists used a Met Office climate model to simulate variations in the Atlantic Ocean. In the north Atlantic recent freshening, recorded before 2003, has been reversed. These changes could be because of natural variability. However, in the sub-tropics where the increased salinity was found to be outside natural variability, the changes could only be attributed to human-induced global warming.

Met Office Hadley Centre

Walker Institute